CLASSIFICATION C-O-N-F-I-D-E-N-T-I-A-L

CENTRAL INTELLIGENCE AGENCY

REPORT

INFORMATION REPORT

CD NO. 25X1

COUNTRY	USSR (Kazakh SSR)	DATE DISTR.	9 May 1955
SUBJECT	Zinc Works Zavod No. 10 and Zavod No. 11 in Ust-Kamenogorsk	NO. OF PAGES	11
PLACE ACQUIRED		NO. OF ENCLS. (LISTED BELOW)	25X1
DATE OF INFO.		SUPPLEMENT TO REPORT NO.	25X1

THIS IS UNEVALUATED INFORMATION

25X1

Attached is being forwarded as received. 25X1

25X1

25X1

CLASSIFICATION C-O-N-F-I-D-E-N-T-I-A-L

STATE	X	NAVY	X	NSRB		DISTRIBUTION					
ARMY	X	AIR	X	FBI							

CLASSIFICATION CONFIDENTIAL

COUNTRY USSR REPORT

TOPIC Zinc Works Zavod 10 and Zavod 11 in Ust-Kamenogorsk, Kazakh SSR 25X1

25X1

EVALUATION PLACE OBTAINED 25X1

DATE OF CONTENT 25X1

DATE OBTAINED DATE PREPARED 30 July 1954

REFERENCES

PAGES 4 ENCLOSURES (NO. & TYPE) 2 - sketches on ditto, with legends

REMARKS

This is UNEVALUATED Information

25X1

1. The Russian name of the zinc works in Ust-Kamenogorsk (49°46'N/82°36'E) was Ust-Kamenogorski [redacted]nkovy Zavod. The plant, which officially used the abbreviation UTsZ, was usually called Zavod 10. Another plant which had been under construction since 1948 was called Zavod 11.

2. The plant was located just north of the town, between the Zashchita-Leninogorsk railroad line and the Ulba River which empties into the Irtysh River. The Ulba River is about 60 meters wide at this point. Ust-Kamenogorsk which, allegedly, had a population of 35,000 in 1949 was rapidly expanding. In addition to settlements, a number of industrial plants and a large [redacted] dam for a large hydro-electric power station were under construction there. The works were linked by several Russian broad-gauge railroad tracks with a large freight station on the railroad line to Leninogorsk. The name of this freight station allegedly was Tupik (sic). Two former German Diesel locomotives, three steam locomotives and a large number of railroad cars were available at the plant. Some of the cars were from the Magdeburg zinc works as inscription on them indicated. In May 1949, a total of 30 new ZIS trucks were available for road transportation.[1]

3. The construction of the plant was based on German plans which were scheduled to be carried out prior to the war. [redacted] construction work on the plant started in 1942/1943. The equipment of a mechanical factory, which had been transferred there from the Caucasus during the war, was used in addition to equipment from other places. After 1945, a large number of PWs were employed to accelerate construction work so as to make it possible to start production as early as the fall of 1947. In 1948, a second stage of construction work was started in the area adjoining the zinc works, while the production facilities erected during the first construction stage were expanded. The equipment of the former Magdeburg Zinc Works was to be installed in the shops scheduled to be built in the second stage of construction. These shops were, allegedly, called Zavod 11 and the entire plant which was scheduled to be the largest zinc works in the world was expected to be completed in 1952 or 1955. [redacted] the completed plant would cover an area of 35 square kilometers. Several delays were experienced during the first construction stage, due to

25X1

25X1

an irregular supply of raw materials and the non-arrival of mechanical equipment, such as roasting furnaces, from the USA. The firm entrusted with the construction of the plant was repeatedly mentioned as Osmo 4 (sic), while [redacted] the construction work was executed by the Sib-Spets-Stro (Siberian special construction). 25X1

4. The building site of the first construction stage covered an area of 700x500 square meters. It included the following sections Tsekh No 1, roasting section, under construction in 1949; Tsekh No 2, mixing section; Tsekh No 3, electrolytical and zinc casting department and gold section, still under construction in 1949; Tsekh No 4, sulphur section; various auxiliary sections and a plant-owned TEZ power station. In late 1949, the framework of three workshops of construction stage 2 was completed. [redacted] UNCODED a rolling mill was also going to be built. Electric current was supplied by the plant-owned power station. No trouble was experienced in power supply. Water from the Ulba River was supplied by a pumping station equipped with two electric 200-HP pumps.[2] 25X1

5. The lead and zinc ores needed by the zinc works arrived from the ore deposits of Leninogorsk, Belousovka, north and northwest of Ust-Kamenogorsk and another deposit east of Ust-Kamenogorsk. The enriched ores arrived by rail from Leninogorsk and Belousovka and by barge from the mines located farther eastward. The ores contained lead which was processed in Leninogorsk and, in addition, zinc, copper, cadmium, cobalt, gold and silver. [redacted] 25X1 the ores also contained uranium. The percentage of zinc was between 10 and 30 percent or, according to another PW, between 7 and 29 percent. Prior to the opening of the zinc works, the zinc ores were processed in Belovo, Kemerovo district, and in Chelyabinsk, in the Urals. In early 1948, the daily ore deliveries amounted to 360 tons. [redacted] in 1949, between 25X1 600 and 700 tons arrived daily. Additional supplies arrived occasionally. The quantities of ore supplied, allegedly, exceeded the processing capacity of the plant with the result that large ore dumps were piled up in the area. Arrivals of secondary materials were also observed in addition to the ore which showed a gray, grayish-brown or grayish-blue color. Material required for electrolytic processes arrived in prismatic leaden containers, 30 centimeters high with the sides of the base being 12 to 15 centimeters long. The type of this ore was not determined. No residues remained in the containers after they had been emptied. A vast number of empty containers were lying about in the premises of the plant and were used as soldering lead by the Soviets. Another gray mass, contained in bags, 50 centimeters high and 30 centimeters in diameter, weighing 40 kg, was also supplied. This material was processed at the gold section, [redacted] 25X1 , Sulphuric acid arrived regularly in tank cars, allegedly from Magdeburg at a daily rate of 10 tank carloads.

6. Production at the plant included electrolytic zinc which was cast in ribbed ingots, 25x15x5 centimeters, weighing 12.5 kg, and in similar ingots, 50x30x3 centimeters, weighing about 30 kg. The zinc was classified as grade 0 (best quality) and grades 1 and 2. The ingots received the UTsZ stamp and a grade mark. In early 1948, the daily zinc output was between 15 and 20 tons but rose to about 36 tons a day by the end of 1948. It was estimated that the average daily output fluctuated between 70 and 72 tons by the end of 1949. On completion of Tsekh No 1, which worked only at 50 percent of capacity in late 1949, the production was expected to increase considerably. In addition to zinc, small quantities of gold and tin were also produced. No details were, however, available on this production. Large quantities of concentrates of cadmium were obtained as byproducts. They were shipped in barrels, 1 meter high and between 60 and 70 centimeters in diameter. The cadmium concentrates were of loamlike viscosity and olive-green color. [redacted] 18 tons of 25X1 this material were shipped every week in late 1949. No production of copper and cobalt was observed. The zinc ingots were regularly shipped by rail. Large quantities of zinc ingots were always stored in the plant area.[3]

UNC [redacted] 25X1

the pulverized ore was taken by a conveyer from the raw material depot (see item I 3 in Annex 2) to the third story in Tsekh No 1 (see item I 4). The end of the conveyer was in the ore mill where the mass was ground for the second time. On leaving the ore mills, the ore dust was conveyed through chutes to the furnaces installed on the ground floor. The ore was heated to 700°C and carried by trucks to a lead-lined wooden trough which contained an acidy liquid with which the ore dust was mixed and subsequently flushed to lead-lined vats. The liquid ore-acid mixture, which meanwhile had turned brown, was pumped from these vats through lead pipes to lead-lined wooden vats, 80 centimeters high and about 2 meters in diameter. These wooden vats were on the second floor. From there they were conveyed to similar vats on the third floor. Compressed air was blown into the bottoms of these vats to cause the mass to bubble. The mass was then pumped to the fourth floor and conveyed to Tsekh No 2 through a lead-lined trough. The lead-lined trough emptied the mass into several lead-lined small vats in Tsekh No 2. The vats also received compressed air to cause the masses to bubble. The masses were subsequently conveyed to larger vats fitted with electrically driven stirring apparatus. From there, the masses were conveyed to concrete containers into which large copper frames with coarse linen cloths spread between their sides were dipped for an unknown period of time. After the frame had been lifted out from the concrete container, the canvas was covered with a brown loamlike thin layer. The canvas then was cleansed by means of automatic brushes and the refuse was dumped into special vats. The masses were then pumped through copper pipes to the third floor of Tsekh No 2 and passed through filters into square lead-lined wooden containers. Canvas-covered wooden disks fixed to a transverse axle were dipped into these containers and could rotate about this axle and, on emerging from the masses, were puffed up by compressed air and cleansed with brushes. During this operation, a loamlike mass dropped off, slid down over a duct into trucks on the second floor and finally was carried to the refuse heaps in the open. It was planned that this waste, which still contained 17 percent of zinc, should be utilized to a higher degree, for which purpose two drying kilns were built to dry the zinc waste. The powder obtained in this manner was to undergo a process in drums, 10 meters long and 2 meters in diameter on which, however, only vague information was available. The liquid mass left over in the containers was conveyed over open channels to another section of Tsekh No 2 and a grayish-black granular mass, produced in a secondary plant was added to it underway. The channels ended in wooden vats fitted with stirring apparatus. After being stirred, the mass went to the filtering plant which looked like cells of a motor car battery. The filter consisted of a coarse linen filtering cloth and a filtering plate with an unidentified number of layers which resembled a ribbed lead plate closely joined. After the filtering process, a clear liquid left the plant through a pipe system over inclined lead channels and emptied into six lead-lined wooden containers, 50 meters long, 1.5 meters wide and 2 meters deep, in Tsekh No 3. Aluminum plates, 1 meter long and 80 centimeters wide, were arranged closely together suspended from slide rails fitted in these vats. The plates were fed with electric current and left in the liquid which was in the vats for an unknown period of time. Zinc layers, about one millimeter thick, settled on the two sides of the aluminum plates and could be easily removed. The zinc coats were carried by electric cars to the coke and oil-fired melting furnace. The melting furnace had a 4x5-meter base and was 3 meters high. The tapping height was 1.5 meters. The molten zinc was cast in ingots in water-cooled molds and, after cooling, was carried to the storage depot.

25X1

8. [redacted] about 1,000 persons were assigned to each of the shifts. Working methods in the various sections were highly mechanized. Work in the principal production sections was done in three shifts, namely from 0800 to 1600, 1600 to 2400 and 2400 to 0800. Work in certain secondary sections was done in two shifts. The percentage of women workers at the plant was very high or about 50 to 60 percent, [redacted] Petrov (fnu) was the chief engineer in charge of the erection of the plant, and Korrorov (fnu) was general manager of the plant. 25X1

9. The entire area of the plant was completely surrounded, partly by a wall and partly by a fence. In addition, the various plant sections were separated by board fences. The gold producing section was made more secure by prohibited zones. Each plant section could be entered only by holders of special permits. The workers of the gold-producing section were not only subjected to very severe checking of their permits but also were X-ray checked. Watchtowers permanently manned by members of the plant militia were erected around the entire premises of the plant and along the bordering fences of the individual plant sections.

1. [redacted] Comment. For location of the zinc works, see layout sketch in Annex 1, 25X1

2. [redacted] Comment. For details concerning the organization of the zinc works, see organization plan in Annex 2. Owing to the simple layout of the plant, [redacted] the first stage of construction of the plant seems to be clarified. 25X1 25X1

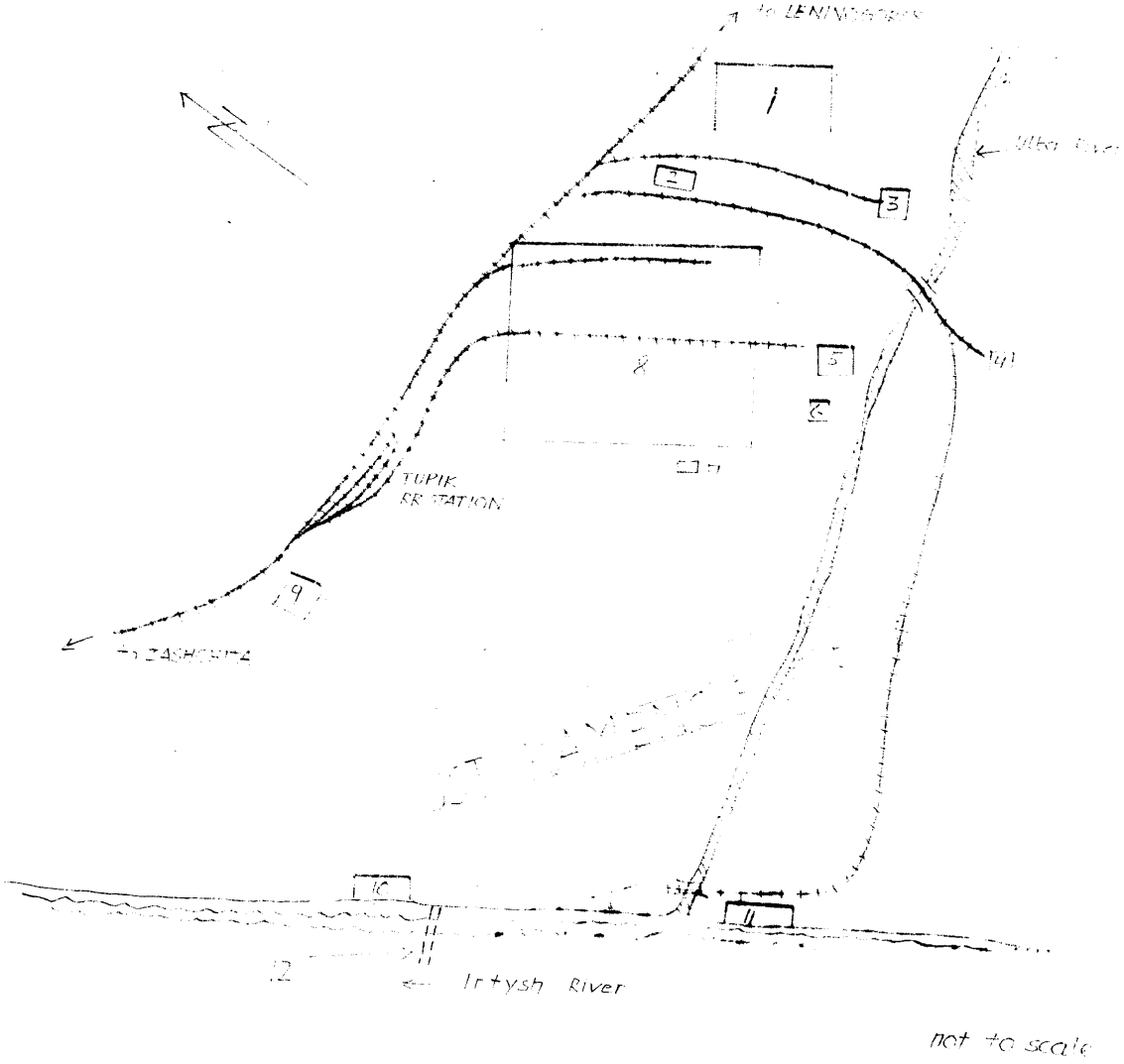
3. [redacted] Comment. The weekly production of 500 tons of zinc adds up to a yearly production of 26,000 tons. A yearly production of about 40,000 tons may be reached after completion of the first stage of construction of the zinc works. The Magdeburg Zinc Works, whose equipment was scheduled to be used in the second construction stage of the plant, i.e. Zavod No 11, had formerly produced 40,000 tons of electrolytic zinc. The yearly output of the Ust-Kamenogorsk zinc works may therefore safely be estimated at 80,000 tons after completion of the second stage of construction. Other products previously manufactured by the Magdeburg Zinkhuette included per year 150 tons of cadmium; 670 tons of lead; 28 tons of copper; 50 tons of arsenic; 2.4 tons of silver; 1.85 tons of nickel; 0.74 tons of cobalt and 0.55 tons of thallium. It is believed that the Magdeburg mechanical equipment for these by-products have been moved to Ust-Kamenogorsk and that they are now extracted in Kamenogorsk. 25X1

CONFIDENTIAL

Annex 1

25X1

Zinc Works in Ust-Kamenogorsk



Legend: See next page

25X1

25X1

Legend.

1 Airfield

2 Main garage

3 Spirits factory

4 Grease factory

5 Construction management and auxiliary construction offices of Sib-Spets-Stro

6 Pump works

7 Concrete factory

8 Zinc works UTsZ, first and second stage of construction and power station

9 Large fuel depot

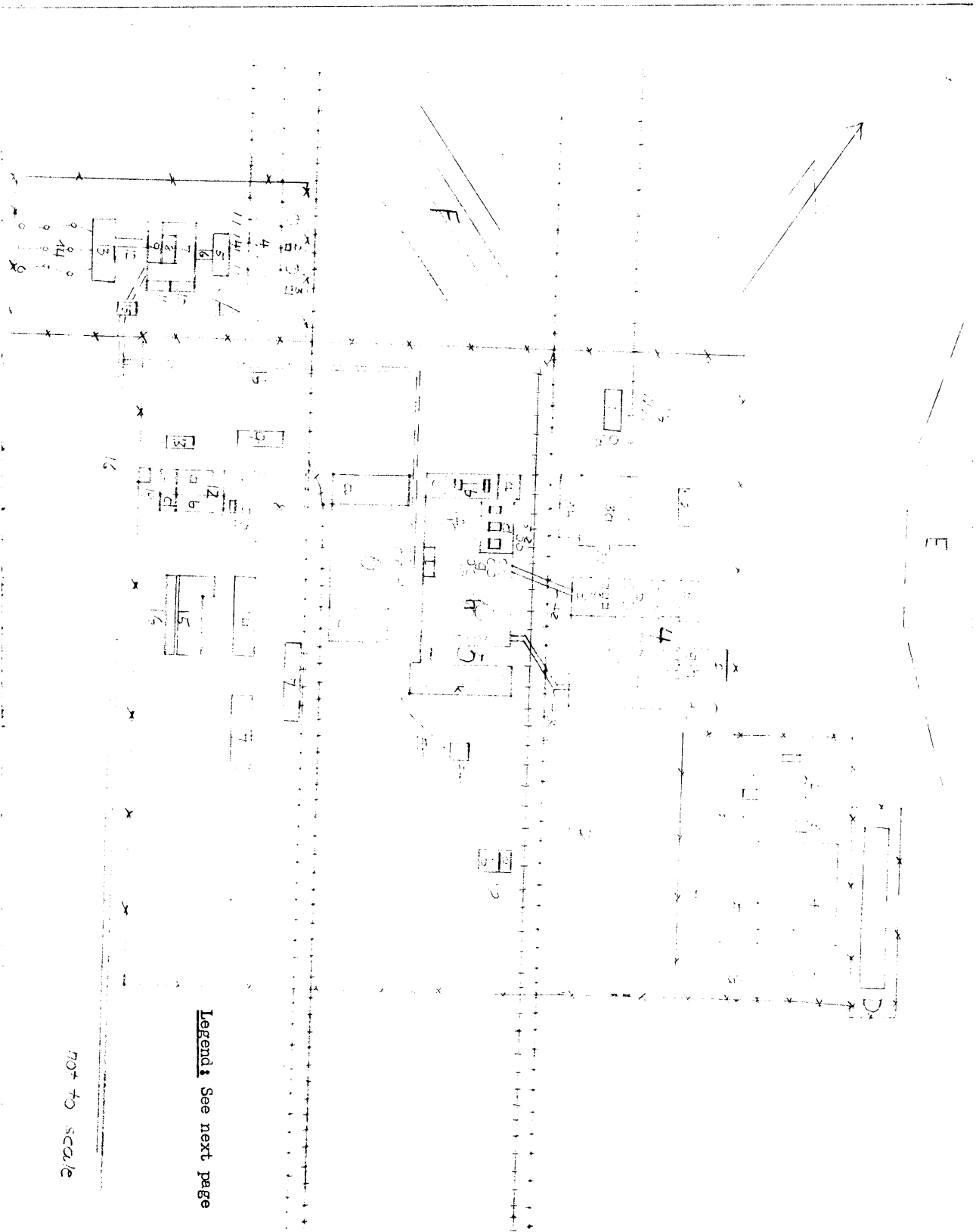
10 River harbor

11 River harbor

12 Ferry

25X1

Zinc Works in Ust-Kamenogorsk



Legend: See next page

not to scale

Legend.

A Electric power station of zinc works, built between 1945 and 1947

1 Two concrete oil bunkers, about 14 meters in diameter and 6 meters deep

2 Pumping station

3 Transformer house

4 Coal store, 6 meters deep, roofed. The coal arrived from Karaganda, Kazakhstan

5 Coal-grinding plant

6 Coal elevator

7 to 11 TEZ main building:

7 Engine house

8 Boiler hall with two vertical-tube boilers, 15 meters high. The daily coal consumption allegedly was between 15 and 20 tons.

9 Turbine room. Two US-type turbines of an aggregate output of 45,000 kW were available

25X1

10 Offices

11 Baths

12 Cross corridor to transformer house

13 Transformer house and switching installation

14 High-voltage lines

15 Water main for boiler water. The boiler main was connected by a pipe line with the pumping station on the Ulba River. The pipe line was laid in a cemented pit, 2 meters wide and 2 meters deep, which was covered in the plant area proper and was open outside. The pit also served to carry off the returning water.

16 Water mains and canal supplying the zinc works proper. The hatched line indicates the course of the covered part.

B Zinc works, Zavod No 10

1 Central heating plant with three boilers

a Brick smokestack, 30 meters high

b Coal store

2 Store house

3 Raw material store

a Conveying plant linked with Tsekh No 1 by a conveyor belt

b Zinc agglomerates storage

c Conveyor belt

25X1

4 Tsekh No 1

a Ventilator plant with 60-centimeter pipe line linking it with the adjacent building. The fans were US-made.

b Sulphuric acid container

c Three pumps for conveying sulphuric acid

d Office buildings and baths

e Conveyance of sulphuric acid and ore

f ftoohh was believed [redacted] to be a roasting plant because of the furnaces set up there. No details on the plant were available. The plant was connected with the roasting section (item 4 i) by two tubes, over 1 meter in diameter. [redacted] believed that each tube led to a group of four roasting furnaces in Tsekh No 1. 25X1 25X1

i Roasting section with eight furnaces, four of which were in operation in late 1949, while four smaller ones were under construction at the time. The furnaces were electrically driven. Grinding mills, where the agglomerates were subjected to a second grinding operation before being conveyed to the roasting furnaces, were installed in the story above the furnaces (item 3).

k Cross corridor to Tsekh No 2

l Brick smokestack, 70 meters high

5 Tsekh No 2. The machines were of Russian, Italian or German origin. The sketch only indicates the arrangement of the ground floor. The filtering plants were in the second or third story.

a Room of undetermined purpose. [redacted] believed that cadmium concentrates were tapped there. 25X1

b Drying section with a large furnace

c Baths

d Compressor room with three compressors of American, Italian and Russian manufacture

e Two compressed air containers

f Two stirring apparatus close to a small concrete basin

g Mixing vats

h Four stirring apparatus, with two concrete basins close to them.

i Concrete basin

k Room accomodating sulphuric vats, previously made of Polish pine, now made in the USSR and lead lined

l Office building

m One or two melting furnaces were set up in this building. The melted material obtained there was sprayed with compressed air into funnels. After cooling, a grayish-black mass was obtained which was used as additional material in Tsekh No 2

n Compressed air pi

25X1

6 Tsekh No 3

a Electric power station and transformers with six small and three large American-made transformers and four rectifiers

b Electrolytic section allegedly with 100 electrolytic cells

c Zinc casting section with one furnace

d Two water trunks

7 Store house for finished zinc ingots

8 Greens

9 New laboratory

10 Transformer house

11 Sheet cutting plant with American-made plate shears capable of cutting iron up to 20 millimeters thick

12 Mechanical repair shop, called OSMO-4 [redacted] 25X1

a Turner's shop with 20 lathes and another 7 machine tools of various description

b Store house

c Offices

d Forge with a large and a small US-Lincoln-type pneumatic hammer and two annealing furnaces

13 Electric repair shop

14 Model maker's shop and carpenter's shop with steam drying plant

15 Non-ferrous metal foundry for replacement parts, including such for motor vehicles and mining machinery. Two furnaces, each 1.5 meters in diameter were in the foundry.

16 Iron foundry for local requirements. Three cupola ovens were available.

17 Saw mill

18 a Forge

b Obsolete boiler house out of service

19 Guard building.

25X1

CLASSIFICATION C-O-N-F-I-D-E-N-T-I-A-L

CENTRAL INTELLIGENCE AGENCY

INFORMATION REPORT

REPORT

CD NO.

COUNTRY USSR (Kazakh SSR)

DATE DISTR. 9 May 1955

SUBJECT Zinc Works Zavod No. 10 and Zavod No. 11 in Ust-Kamenogorsk

NO. OF PAGES 11

PLACE ACQUIRED

25X1

NO. OF ENCLS. (LOWO)

DATE OF INFO.

SUPPLEMENT TO REPORT NO.

This is UNEVALUATED Information

THIS IS UNEVALUATED INFORMATION

25X1

Attached is being forwarded as received.

25X1

25X1

CLASSIFICATION C-O-N-F-I-D-E-N-T-I-A-L

STATE	X	NAVY	X	NSRB		DISTRIBUTION							
ARMY	X	AIR	X	FBI									

25X1

25X1

CLASSIFICATION CONFIDENTIAL

COUNTRY USSR REPORT

TOPIC Zinc Works Zavod 10 and Zavod 11 in Ust-Kamenogorsk, Kazakh SSR

25X1

EVALUATION PLACE OBTAINED

25X1

DATE OF CONTENT

DATE OBTAINED DATE PREPARED

25X1

REFERENCES

PAGES 4 ENCLOSURES (NO. & TYPE) 2 sketches

REMARKS

This is UNEVALUATED Information

25X1

1. The Russian name of the zinc works in Ust-Kamenogorsk (49°58'N/82°38'E) was Ust-Kamenogorski Tsinkovy Zavod. The plant, which officially used the abbreviation UTsZ, was usually called Zavod 10. Another plant which had been under construction since 1948 was called Zavod 11.

2. The plant was located just north of the town, between the Leshchinka-Leninogorsk railroad line and the Ulba River which empties into the Irtysh River. The Ulba River is about 60 meters wide at this point. Ust-Kamenogorsk which, allegedly, had a population of 35,000 in 1949 was rapidly expanding. In addition to settlements, a number of industrial plants and a large refining [illegible] for a large hydro-electric power station were under construction there. The works were linked by several Russian broad-gauge railroad tracks with a large freight station on the railroad line to Leninogorsk. The name of this freight station allegedly was Tapik (sic). Two former German Diesel locomotives, three steam locomotives and a large number of railroad cars were available at the plant. Some of the cars were from the Magdeburg zinc works as inscription on them indicated. In May 1949, a total of 20 new ZIS trucks were available for road transportation.

3. The construction of the plant was based on German plans which were scheduled to be carried out prior to the war.

UNCOPED

Construction work on the plant started in 1942/1943. The equipment of a mechanical factory, which had been transferred there from the Caucasus during the war, was used in addition to equipment from other places. After 1945, a large number of PWs were employed to accelerate construction work so as to make it possible to start production as early as the fall of 1947. In 1948, a second stage of construction work was started in the area adjoining the zinc works, while the production facilities erected during the first construction stage were expanded. The equipment of the former Magdeburg Zinc Works was to be installed in the shops scheduled to be built in the second stage of construction. These shops were, allegedly, called Zavod 11 and the entire plant which was scheduled to be the largest zinc works in the world was expected to be completed in 1952.

25X1

[illegible] the completed plant would cover an area of [illegible] square kilometers. Several delays were experienced during the first construction stage, due to

25X1

CLASSIFICATION CONFIDENTIAL

25X1

an irregular supply of raw materials and the non-arrival of mechanical equipment, such as roasting furnaces, from the USA. The first connected with the construction of the plant was repeatedly mentioned in Line 4 (sic), while [redacted] the construction work was executed by the Sib-Spets-Stro (Siberian special construction).

25X1

4. The building site of the first construction stage covered an area of 700x500 square meters. It included the following sections: Tsekh No 1, roasting section, under construction in 1949; Tsekh No 2, mixing section; Tsekh No 3, electrolytical and zinc casting department and gold section, still under construction in 1949; Tsekh No 4, sulphur section; various auxiliary sections and a plant-owned TEZ power station. In late 1949, the framework of three workshops of construction stage 2 was completed. [redacted] a rolling mill was also going to be built. Electric current was supplied by the plant-owned power station. No trouble was experienced in power supply. Water from the Ulba River was supplied by a pumping station equipped with two electric 200-HP pumps.

25X1

5. The lead and zinc ores needed by the zinc works arrived from the ore deposits of Leninogorsk, Belousovka, north and northwest of Ust-Kamenogorsk and another deposit east of Ust-Kamenogorsk. The enriched ores arrived by rail from Leninogorsk and Belousovka and by barge from the mines located farther eastward. The ores contained lead which was processed in Leninogorsk and, in addition, zinc, copper, cadmium, cobalt, gold and silver. [redacted] the ores also contained uranium. The percentage of zinc was between 10 and 30 percent or, according to another FW, between 7 and 29 percent. Prior to the opening of the zinc works, the zinc ores were processed in Belovo, Kemerovo district, and in Chelyabinsk, in the Urals. In early 1948, the daily ore deliveries amounted to 360 tons. [redacted] in 1949, between 600 and 700 tons arrived daily. Additional supplies arrived occasionally. The quantities of ore supplied, allegedly, exceeded the processing capacity of the plant with the result that large ore dumps were piled up in the area. Arrivals of secondary materials were also observed in addition to the ore which showed a gray, grayish-brown or grayish-blue color. Material required for electrolytic processes arrived in prismatic leaden containers, 30 centimeters high with the sides of the base being 12 to 15 centimeters long. The type of this ore was not determined. No residues remained in the containers after they had been emptied. A vast number of empty containers were lying about in the premises of the plant and were used as soldering lead by the Soviets. Another gray mass, contained in bags, 50 centimeters high and 30 centimeters in diameter, weighing 40 kg, was also supplied. This material was processed at the gold section, [redacted] Sulphuric acid arrived regularly in tank cars, allegedly from Magdeburg at a daily rate of 10 tank carloads.

25X1

25X1

6. Production at the plant included electrolytic zinc which was cast in ribbed ingots, 25x15x5 centimeters, weighing 12.5 kg, and in similar ingots, 50x30x3 centimeters, weighing about 30 kg. The zinc was classified as grade 0 (best quality) and grades 1 and 2. The ingots received the UTsZ stamp and a grade mark. In early 1948, the daily zinc output was between 15 and 20 tons but rose to about 36 tons a day by the end of 1948. It was estimated that the average daily output fluctuated between 70 and 72 tons by the end of 1949. On completion of Tsekh No 1, which worked only at 50 percent of capacity in late 1949, the production was expected to increase considerably. In addition to zinc, small quantities of gold and tin were also produced. No details were, however, available on this production. Large quantities of concentrates of cadmium were obtained as byproducts. They were shipped in barrels, 1 meter high and between 60 and 70 centimeters in diameter. The cadmium concentrates were of loamlike viscosity and olive-green color. [redacted] 18 tons of this material were shipped every week in late 1949. No production of copper and cobalt was observed. The zinc ingots were regularly shipped by rail. Large quantities of zinc ingots were always stored in the plant area.

25X1

25X1

7. [redacted] 25X1

the pulverized ore was taken by a conveyer from the raw material depot (see item B 3 in Annex 2) to the third story in Tsekh No 1 (see item B 4). The end of the conveyer was in the ore mill where the mass was ground for the second time. On leaving the ore mills, the ore dust was conveyed through chutes to the furnaces installed on the ground floor. The ore was heated to 700°C and carried by trucks to a lead-lined wooden trough which contained an acidy liquid with which the ore dust was mixed and subsequently flushed to lead-lined vats. The liquid ore-acid mixture, which meanwhile had turned brown, was pumped from these vats through lead pipes to lead-lined wooden vats, 80 centimeters high and about 2 meters in diameter. These wooden vats were on the second floor. From there they were conveyed to similar vats on the third floor. Compressed air was blown into the bottoms of these vats to cause the mass to bubble. The mass was then pumped to the fourth floor and conveyed to Tsekh No 2 through a lead-lined trough. The lead-lined trough emptied the mass into several lead-lined small vats in Tsekh No 2. The vats also received compressed air to cause the masses to bubble. The masses were subsequently conveyed to larger vats fitted with electrically driven stirring apparatus. From there, the masses were conveyed to concrete containers into which large copper frames with coarse linen cloths spread between their sides were dipped for an unknown period of time. After the frame had been lifted out from the concrete container, the canvas was covered with a brown loamlike thin layer. The canvas then was cleansed by means of automatic brushes and the refuse was dumped into special vats. The masses were then pumped through copper pipes to the third floor of Tsekh No 2 and passed through filters into square lead-lined wooden containers. Canvas-covered wooden disks fixed to a transverse axle were dipped into these containers and could rotate about this axle and, on emerging from the masses, were puffed up by compressed air and cleansed with brushes. During this operation, a loamlike mass dropped off, slid down over a duct into trucks on the second floor and finally was carried to the refuse heaps in the open. It was planned that this waste, which still contained 17 percent of zinc, should be utilized to a higher degree, for which purpose two drying kilns were built to dry the zinc waste. The powder obtained in this manner was to undergo a process in drums, 10 meters long and 2 meters in diameter on which, however, only vague information was available. The liquid mass left over in the containers was conveyed over open channels to another section of Tsekh No 2 and a grayish-black granular mass, produced in a secondary plant was added to it underway. The channels ended in wooden vats fitted with stirring apparatus. After being stirred, the mass went to the filtering plant which looked like cells of a motor car battery. The filter consisted of a coarse linen filtering cloth and a filtering plate with an unidentified number of layers which resembled a ribbed lead plate closely joined. After the filtering process, a clear liquid left the plant through a pipe system over inclined lead channels and emptied into six lead-lined wooden containers, 50 meters long, 1.5 meters wide and 2 meters deep, in Tsekh No 3. Aluminum plates, 1 meter long and 80 centimeters wide, were arranged closely together suspended from slide rails fitted in these vats. The plates were fed with electric current and left in the liquid which was in the vats for an unknown period of time. Zinc layers, about one millimeter thick, settled on the two sides of the aluminum plates and could be easily removed. The zinc coats were carried by electric cars to the coke and oil-fired melting furnace. The melting furnace had a 4x5-meter base and was 3 meters high. The tapping height was 1.5 meters. The molten zinc was cast in ingots in water-cooled molds and, after cooling, was carried to the storage depot.

25X1

8. [redacted] about 1,000 persons were assigned to each of the shifts. Working methods in the various sections were highly mechanized. Work in the principal production sections was done in three shifts, namely from 0800 to 1600, 1600 to 2400 and 2400 to 0800. Work in certain secondary sections was done in two shifts. The percentage of women workers at the plant was very high or about 50 to 60 percent, [redacted] Petrov (fnu) was the chief engineer in charge of the erection of the plant, and Konorov (fnu) was 25X1 general manager of the plant.

CONFIDENTIAL

[redacted] 25X1

9. The entire area of the plant was completely surrounded, partly by a wall and partly by a fence. In addition, the various plant sections were separated by board fences. The gold producing section was made more secure by prohibited zones. Each plant section could be entered only by holders of special permits. The workers of the gold-producing section were not only subjected to very severe checking of their permits but also were X-ray checked. Watchtowers permanently manned by members of the plant militia were erected around the entire premises of the plant and along the bordering fences of the individual plant sections.

1. [redacted] Comment. For location of the zinc works, see layout sketch in Annex 1, 25X1

2. [redacted] Comment. For details concerning the organization of the zinc works, see organization plan in Annex 2. Owing to the simple layout of the plant, 25X1

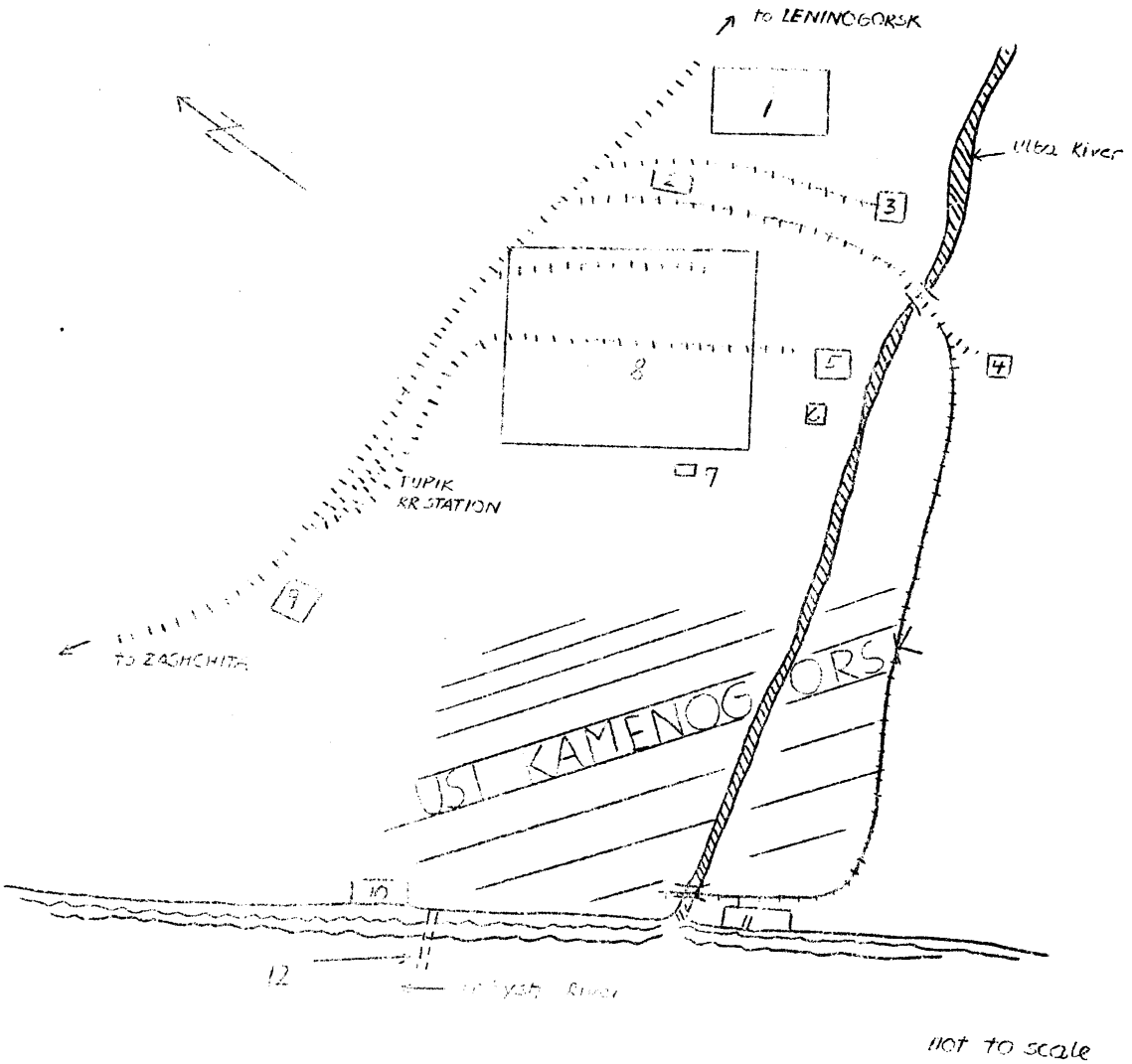
[redacted] the first stage of construction of the plant seems to be clarified. 25X1

3. [redacted] Comment. The weekly production of 500 tons of zinc adds up to a yearly production of 26,000 tons. A yearly production of about 40,000 tons may be reached after completion of the first stage of construction of the zinc works. The Magdeburg Zinc Works, whose equipment was scheduled to be used in the second construction stage of the plant, i.e. Zavod No 11, had formerly produced 40,000 tons of electrolytic zinc. The yearly output of the Ust-Kamenogorsk zinc works may therefore safely be estimated at 80,000 tons after completion of the second stage of construction. Other products previously manufactured by the Magdeburg Zinkhuette included per year 150 tons of cadmium; 670 tons of lead; 28 tons of copper; 50 tons of arsenic; 2.4 tons of silver; 1.85 tons of nickel; 0.74 tons of cobalt and 0.55 tons of thallium. It is believed that the Magdeburg mechanical equipment for these by-products have been moved to Ust-Kamenogorsk and that they are now extracted in Kamenogorsk. 25X1

Annex 1

25X1

Zinc Works in Ust-Kamenogorsk



not to scale

Legend: See next page

25X1

Legend.

1 Airfield

2 Main garage

3 Spirits factory

4 Grease factory

5 Construction management and auxiliary construction offices of Sib-Spets-Stro

6 Pump works

7 Concrete factory

8 Zinc works UTsZ, first and second stage of construction and power station

9 Large fuel depot

10 River harbor

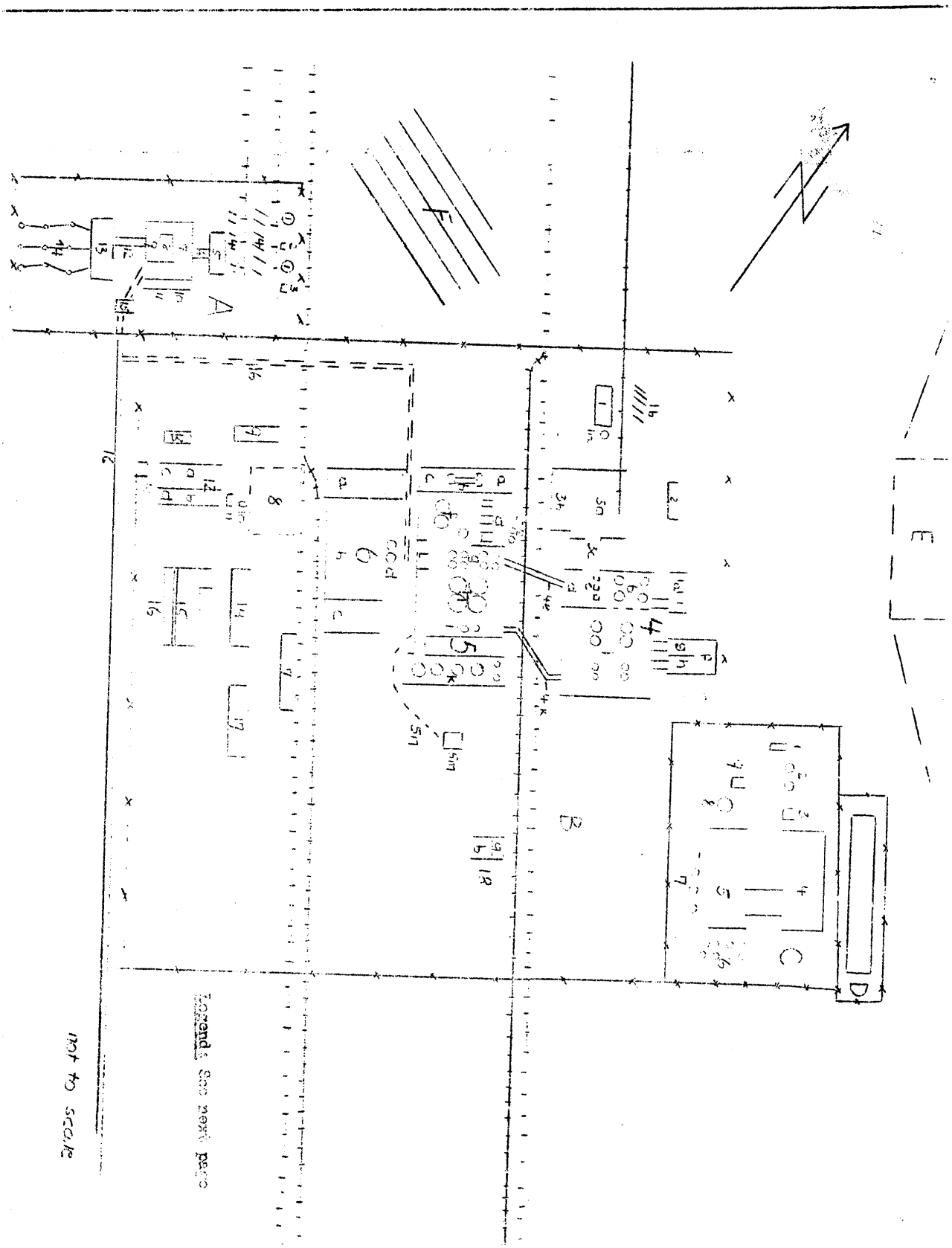
11 River harbor

12 Ferry

Annex 2

25X1

Zinc Works in Ust-Kamenogorsk



25X1

Legend:

A Electric power station of zinc works, built between 1945 and 1947

1 Two concrete oil bunkers, about 14 meters in diameter and 6 meters deep

2 Pumping station

3 Transformer house

4 Coal store, 6 meters deep, roofed. The coal arrived from Karaganda, Kazakhstan

5 Coal-grinding plant

6 Coal elevator

7 to 11 TEZ main building:

7 Engine house

8 Boiler hall with two vertical-tube boilers, 15 meters high. The daily coal consumption allegedly was between 15 and 20 tons.

9 Turbine room. Two US-type turbines of an aggregate output of 45,000 kW were available

25X1

10 Offices

11 Baths

12 Cross corridor to transformer house

13 Transformer house and switching installation

14 High-voltage lines

15 Water main for boiler water. The boiler main was connected by a pipe line with the pumping station on the Ulba River. The pipe line was laid in a cemented pit, 2 meters wide and 2 meters deep, which was covered in the plant area proper and was open outside. The pit also served to carry off the returning water.

16 Water mains and canal supplying the zinc works proper. The hatched line indicates the course of the covered part.

A Zinc works, Zavod No 10

1 Central heating plant with three boilers

a Brick smokestack, 30 meters high

b Coal store

2 Store house

3 Raw material store

a Conveying plant linked with Trakt No 1 by a conveyor belt

b Zinc agglomerates storage

c Conveyor belt

4 Tsekh No 1

a Ventilator plant with 60-centimeter pipe line linking it with the adjacent building. The fans were US-made.

b Sulphuric acid container

c Three pumps for conveying sulphuric acid

d Office buildings and baths

e Conveyance of sulphuric acid and ore

f to h was believed [redacted] to be a roasting plant because of the furnaces set up there. No details on the plant were available. The plant was connected with the roasting section (item 4 i) by two tubes, over 1 meter in diameter. [redacted] believed that each tube led to a group of four roasting furnaces in Tsekh No 1. 25X1 25X1

i Roasting section with eight furnaces, four of which were in operation in late 1949, while four smaller ones were under construction at the time. The furnaces were electrically driven. Grinding mills, where the agglomerates were subjected to a second grinding operation before being conveyed to the roasting furnaces, were installed in the story above the furnaces (item 3).

k Cross corridor to Tsekh No 2

l Brick smokestack, 70 meters high

5 Tsekh No 2. The machines were of Russian, Italian or German origin. The sketch only indicates the arrangement of the ground floor. The filtering plants were in the second or third story.

a Room of undetermined purpose. [redacted] believed that cadmium concentrates were tapped there. 25X1

b Drying section with a large furnace

c Baths

d Compressor room with three compressors of American, Italian and Russian manufacture

e Two compressed air containers

f Two stirring apparatus close to a small concrete basin

g Mixing vats

h Four stirring apparatus, with two concrete basins close to them.

i Concrete basin

k Room accomodating sulphuric vats, previously made of Polish pine, now made in the USSR and lead lined

l Office building

m One or two melting furnaces were set up in this building. The melted material obtained there was sprayed with compressed air into funnels. After cooling, a grayish-black mass was obtained which was used as additional material in Tsekh No 2

n Compressed air pipes

25X1

6 Tsekh No 3

a Electric power station and transformers with six small and three large American-made transformers and four rectifiers

b Electrolytic section allegedly with 100 electrolytic cells

c Zinc casting section with one furnace

d Two water trunks

7 Store house for finished zinc ingots

8 Greens

9 New laboratory

10 Transformer house

11 Sheet cutting plant with American-made plate shears capable of cutting iron up to 20 millimeters thick

12 Mechanical repair shop, called OSMO-4 25X1

a Turner's shop with 20 lathes and another 7 machine tools of various description

b Store house

c Offices

d Forge with a large and a small US-Lincoln-type pneumatic hammer and two annealing furnaces

13 Electric repair shop

14 Model maker's shop and carpenter's shop with steam drying plant

15 Non-ferrous metal foundry for replacement parts, including such for motor vehicles and mining machinery. Two furnaces, each 1.5 meters in diameter were in the foundry.

16 Iron foundry for local requirements. Three cupola ovens were available.

17 Saw mill

18 a Forge

b Obsolete boiler house out of service

19 Guard building.